CLAIMS

1. A fuel system for supplying pressurised fuel to a plurality of fuel injectors (14a-14f), the fuel system comprising;

an accumulator assembly (16) having first and second accumulator volumes (18, 20) defined within a common accumulator housing (22),

supply means (42) for supplying fuel at a supply pressure level to the first accumulator volume (18),

a plurality of unit pumps (10a-10f) for receiving fuel at the supply pressure level from the first accumulator volume (18) and for pressurising said fuel to an injectable pressure level for supply to the second accumulator volume (20),

wherein each unit pump (10a-10f) includes a pumping plunger (50) for pressuring fuel within an associated pump chamber (52) and being integrated with the accumulator housing (22) so as to permit communication between the first accumulator volume (18) and the pump chamber (52) internally within the accumulator housing (22).

2. The fuel system as claimed in claim 1, wherein each unit pump (10a-10f) is integrated with the accumulator housing (22) by mounting within an opening or cross bore (24a-24f) provided in the accumulator housing (22) so as to pass through the accumulator housing (22).

3. The fuel system as claimed in claim 1 or claim 2, wherein the assembled unit pump (10a-10f) and rail assembly (16) form an integrated pump/rail

assembly, and wherein each unit pump (10a-10f) is received within the accumulator housing (22) so as to permit communication between the second accumulator volume (20) and the pump chamber (52) of each unit pump (10a-10f) internally within the pump/rail assembly.

4. The fuel system as claimed in any one of claims 1 to 3, wherein the accumulator assembly is a rail assembly (16) comprising a first rail volume (18) and a second rail volume (20) housed within a rail housing (22).

5. The fuel system as claimed in claim 4, wherein the first rail volume (18) communicates with the pump chamber (52) of each unit pump (10a-10f) internally within the accumulator housing (22) via first valve means (56).

6. The fuel system as claimed in claim 5, wherein the first rail volume (18) is communicable with the pump chamber (52) of each unit pump (10a-10f) through a non-return valve (56) having an open position, in which the pump chamber (52) communicates with the first rail volume (56), and a closed position in which said communication is broken.

7. The fuel system as claimed in claim 6, wherein the second rail volume (20) is communicable with the pump chamber (52) of each unit pump (10a-10f) through second valve means (58).

8. The fuel system as claimed in claim 7, wherein the second valve means is a rail control valve (58) operable between an open position in which fuel at the injectable pressure level, being a first injectable pressure level, is supplied from the second rail volume (20) to the injectors (14a-14f) and a closed position in which communication between the pump chamber (52) of a unit pump and the

second rail volume (20) is broken so that the unit pump (10a-10f) is operable to increase fuel to a second injectable pressure level.

9. The fuel system as claimed in claim 8, wherein the rail control valve (58) includes an electro-magnetically operable valve which is movable between the open and closed positions by application of an electrical control signal.

10. The fuel system as claimed in any one of claims 4 to 9, wherein the supply means includes a transfer pump (42) for supplying fuel at supply pressure to the first rail volume (18) and, hence, to each unit pump (10a-10f) through the first valve means (56).

11. The fuel system as claimed in any one of claims 4 to 10, wherein the first and second rail volumes (18, 20) are arranged side-by-side, or substantially in parallel with one another, within the rail housing (22).

12. The fuel system as claimed in any one of claims 1 to 11, including a plurality of injectors (14a-14f) for receiving fuel at an injectable pressure level from the pump chamber (52) of an associated unit pump (10a-10f) and/or from the second accumulator volume (20)

13. The fuel system as claimed in claim 12, including a plurality of unit pumps (10a-10f) each of which forms a common unit with one of the injectors (14a-14f).

14. The fuel system as claimed in any one of claims 1 to 13, including nozzle control valve means (36) operable to control the timing of commencement of injection at a first and/or a second injectable pressure level.

15. The fuel system as claimed in claim 14, wherein the nozzle control valve means includes a nozzle control valve (36) that is operable to control fuel pressure within an injector control chamber (44) so as to permit control of injection timing at the first and/or the second injectable pressure level.

16. An accumulator assembly for a common rail fuel system having a plurality of unit pumps (10a-10f), the accumulator assembly including an accumulator housing (22) within which is defined a first accumulator volume (18) for fuel at a supply pressure level and a second accumulator volume (20) for fuel at an injectable pressure level, wherein the accumulator housing (22) is provided with at least one opening (24a-24f) for receiving a unit pump (10a-10f), in use, so that a pump chamber (52) of each unit pump (10a-10f) is communicable with the first accumulator volume (18) internally within the accumulator housing (22).

17. The accumulator assembly as claimed in claim 16, wherein the first accumulator volume is a first rail volume (18) and the second accumulator volume is a second rail volume (20), both of which are defined within a rail housing (22).